



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 7343-2017

Replacing GB/T 7343-1987

**Methods of measurement of the suppression characteristics of
passive EMC filtering devices**

Issued on: July 31, 2017

Implemented on: February 1, 2018

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

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3.1 Terms and definitions

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 7343-1987 "10kHz ~ 30MHz passive radio interference filter and suppression element suppression characteristics

Measurement methods". Compared with GB/T 7343-1987, the main technical content changes as follows.

--- The standard name by the "10kHz ~ 30MHz passive radio interference filter and suppression element suppression characteristics of the measurement method" to

"Passive EMC filter suppression characteristics of measurement methods";

--- Chapter 3 added eight terms and 15 acronyms;

--- Chapter 4 adds EMC filter classification, insertion loss calculation, asymmetric (common mode) mode, symmetrical (differential mode) mode

And a detailed description of the asymmetric mode;

--- Chapter 5 of the measurement of insertion loss to make some changes, including the measurement layout, measurement methods (refined offset and unbiased

Set measurement content), and increased the calibration and verification and uncertainty of the content;

--- Chapter 6 adds impedance measurement content, including direct and indirect methods. Increase the measurement of the layout and procedures, test the layout of the school

Accuracy of measurement and measurement;

--- Chapter 6 added S-related content, including two-port S parameters and four-port S parameters. Specifically for the S parameter said

Measurement of S parameters (including measurement layout and procedures, test

fixtures), calibration of test setup, uncertainty of measurement, etc.

- Increasing the normative appendix AEMC filter suppression characteristics of the measurement uncertainty assessment;
- Added information Appendix B insertion loss measurement test case examples;
- Increased information Appendix C non-50ohm system insertion loss measurement method;
- Added information Appendix D suitable for insertion loss measurement buffer network implementation;
- Increased information Appendix E insertion loss measurement of the general discussion;
- Increased information appendix F impedance measurement test layout;
- Increased information appendix G common mode choke S-parameter measurement;
- Increased information appendix H lead-free DUTS parameters of the measurement layout;
- CISPR17.2011 part of the inductance and resistance symbols are wrong, this standard has been amended;
- CISPR17.2011 Chapter 4 "EMC filter device classification (including Table 1)" of the suspension section, does not meet the national standard, the standard

The suspension section as 4.1, the other extension;

- CISPR17.2011 Appendix A uncertainty in the form of layout problems, the synthesis of standard uncertainty and expansion of uncertainty

Both columns were changed to traffic;

- CISPR 17.2011 Appendix A Table A.2, the calculation of uncertainty has an error, this standard has been amended;
- In the description of formula (E.1) in Appendix E of CISPR 17.2011, the original text " $V_2 = V_0/2$ " has the error " $V_{20} = V_0/2$ "

This standard has been amended;

- Table A.2 Impedance Measurement Uncertainty In the example, the value of the impedance test equipment is wrong. After confirming the communication with CISPR,

Revised to 0.38, the corresponding standard is uncertain, the standard uncertainty of synthesis and the extended uncertainty are also revised.

- In Appendix H Figure H.1 added "Note. The use of transformers is to achieve impedance transformation" to avoid ambiguity.

This standard uses the translation method identical with CISPR17.2011 "passive EMC filter suppression characteristics of measurement." And this standard

The documents of our country whose correspondence in the normative references have a consistent correspondence are as follows.

--- GB/T 4365-2003 Electrotechnical terminology Electromagnetic compatibility [IEC 60050 (161) .1990 and Amd.1-1997 and

Amd.2-1998, IDT]

--- GB 14023-2011 Vehicles, boats and internal combustion engines radio disturbance characteristics used to protect the car receiver limits and measurement

Method (IEC /CISPR12.2009, IDT)

This standard is proposed and managed by the National Radio Frequency Standardization Technical Committee (SAC/TC79).

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Company, Schaffner Electromagnetic Compatibility (Shanghai) Co., Ltd., Changzhou Kennedy Electronics Co., Ltd., Shanghai Nichia Electronics Co., Ltd., Beijing Guanghua Shi Technologies, Shanghai Heng Electronics Co., Ltd., Ening Security Technology (Shanghai) Co., Ltd., Huawei Technologies Co., Ltd.

1 Scope

This standard specifies the measurement method for the suppression characteristics of passive EMC filter devices used in power lines, signal lines and other lines.

The methods specified in this standard also apply to devices that combine overvoltage protection devices with EMC filter devices.

Depending on the device and the measurement circuit, the measurement method is suitable for use in the frequency range from 9 kHz to several GHz.

Note. The measurement methods in this standard apply up to 40GHz.

This standard specifies the laboratory test (type test) and factory test procedures. This standard also has two bias and bias test strips

Under the test method to make the provisions.

The measurement method under bias conditions is used to determine the potential non-linearity of the EMC filter, such as the saturation of the inductor with the core effect. This test is used to indicate the availability of the filter device for a particular

application (for example, a frequency inverter can deliver high amplitude common mode pulse currents to

Inductance saturation). If other methods can be used to determine the non-linearity of the filter, the measurement under bias conditions can be ignored (eg

A separate inductor saturation measurement was performed).

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

IEC 60050 (161) International Electrotechnical Vocabulary (IEV) chapter 161.

Electromagnetic compatibility [Internationalelectrotechnicalvocabulary (IEV) -Chapter161.Electromagneticcompatibility]

IEC /CISPR12:2009 Radio, Harassment Characteristics of Vehicles, Boats and Internal Combustion Engines Limits and Measurements for External Receiver Protection

Methods (Vehicles, boats and internal combustion engines-Radiodisturbance characteristics-Limits and

methodsofmeasurementforthe protection of off-board receivers)

IEC /CISPR16-1-1 Radio disturbance and immunity measuring apparatus and methods - Part 1-1 - Specification for radio disturbance and /

Immunity measuring equipment Measurement equipment (Specification for radiation distance and immunity measuring apparatus

and methods-Part 1-1. adiodisturbance and immunity measuring apparatus- Measuring apparatus)

3.1 Terms and definitions

IEC 60050 (161) and the following terms and definitions apply to this document.

3.1.1

Bias current bias

Current flowing through the device under test (DUT) conductor at DC or AC operating frequency.

3.1.2